

## **The Student Loan Debt Market:**

The role of federal student loan allocation on undergraduate student default rates

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Approved by



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## ABSTRACT

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The role of federal student loan allocation on undergraduate student repayment struggles  
(Under direction of Professor Bin Hu)

This study examines the effectiveness of federal student loan allocation and its role in student loan default rates. The loan allocation method is represented by program loan limits imposed by Congress. In addition to program loan limits, the study considers other educational and economic institutional drivers that education research has been linked to student loan default rates. The relationship between loan limits, other variables, and default rates is tested through a multivariable regression analysis. The analysis suggests that program loan limits do not have a significant effect on student loan default rates, but student loans are an effective means to help students finance education. To conclude the study, I assess three potential loan allocation methods as well as discuss my experience with the study and working with limited public data.

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## CHAPTER ONE: INTRODUCTION

*“When I entered college I was sold a lot of stories about how it was ok to take out loans every year because I would get a job that would pay them off. The only problem was that I was attending a private school that cost over \$40,000 per year. I met my husband there and after we finished our undergraduate work, we went on to master's degree hoping to see the economy turn around. The only problem is that the economy has not turned around the way we need it to and we have built a combined total student debt of over \$330,000 including interest. I am currently working out of field as a teacher making \$30,000 a year and my husband is working part time. In a few months debt collectors will start calling for over \$3,000 a month in student loan payments. The only problem is we only make \$2800 a month after taxes and our other living expenses total approximately \$2,200 a month. This means that we will be unable to pay over \$2,400 a month in student debt. We don't own anything they can take from us so they will go after our cosigners. We can't find anyone who can help us. We have talked to debt consolidation agencies and no one can or will help us. We are drowning all because someone sold us up the river with a story about how great student loans were and how getting a college education would put us ahead of others. Where is this magical educational advantage that everyone likes to talk about because my husband has an MBA and is working as a security guard. We need help. How are ever supposed to make a life for ourselves? How are we ever supposed to own a home or have children when we make a tenth of what we owe in debt? We do take some responsibility for the situation we are in, but at the same time, what were our counselors and lenders thinking when they told a couple of 18 year old college freshman that it was ok to borrow \$300,000? How can we possibly get out of this?”*

-- Christen Kauffman, Teacher from Florida

Christen Kauffman’s story represents one of 427 first-hand accounts of student loan borrowers’ repayment struggles. She posted on The Project on Student Debt’s web forum<sup>1</sup> to join the voices of other borrowers frustrated with their student loan debt load. Her story echoes the central theme of all other borrowers’ stories—inadequate level of income to cover her student loan debt (“Voices”, 2014).

Christen, like other borrowers, blame many players for student loan debt. Players include Congress, the executive branch, colleges, and financial institutions. Congress sets statutory standards on student aid eligibility standards, types, and amount through legislation, while the President establishes higher education initiatives and goals. Meanwhile, the postsecondary institutions determine individual amounts of aid provided

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<sup>1</sup> The Project on Student Debt strives to educate the public on benefits and drawbacks of taking on student loans. It is staffed by employees from the Institute for College Access & Success, a nonprofit research and policy organization.

to students that they received from the Education Department (ED) or a financial institution (Taggart, 2010; “Student Loans,” 2014). Because each of these three groups affects federal student loans, student loan borrowers also seek all players’ perspectives on higher education financing. The relationship between players is frustrating if borrowers’ investment in higher education backfires.

Higher education has become an “economic imperative” (Obama, 2011, para. 40) for success in the U.S. President Obama has recognized the importance of higher education; and therefore, established higher education as a national priority (Obama, 2011). Alongside the President, studies from the ED, Sallie Mae, and the Institute for College and Success, promote the necessity of higher education as well, linking higher education with higher future earnings (Baum, S., Ma, J., & Payea, K., 2013). As policy makers and advocates share their perspectives on higher education with potential college students, more and more students buy into the justification to pursue postsecondary education. In Sallie Mae’s National Study, it affirms that over 70% of students attend college because it is required for a desired occupation or necessary to earn a higher salary (*How America Pays for College 2012*, 2012).

While many preach the wonders of education, they fail to address how students and families can pay for the expensive investment. Student loans have become the most popular way for students to pay for a college education (*How America Pays for College 2012*, 2012; Baum, S., & Payea, K., 2013). However, the popularity is accompanied by a \$1 trillion student loan debt market (Chopra, 2012). Popular press, like Forbes or CFPB<sup>2</sup>

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<sup>2</sup> CFPB, the Consumer Financial Protection Bureau compiles reports, shares guidance, and publishes opinion blogs on different financial products, such as student loans.



blogs, has labeled the increase in student loan borrowers with scary words like “bubble” (Donlan, 2014, para.19) or “too big to fail” (Chopra, 2012, para. 2).

Dolan (2014), a writer for Forbes, applied the economic bubble analogy—the overinvestment in an asset that results in a devaluation of the asset—to the student loan debt market. Dolan determines that as college tuition rises, the rate of return on a college degree decreases; discrediting the soundness of student loan industry because more students default. Students who do not find employment needed to repay student loans are compared to debtors under sub-prime mortgages whose homes are worth less than what is owed to the bank. The difference between student loans and sub-prime mortgages is that students can never get away from their bad debt.

Additionally, as students borrowed \$117 billion in federal student loans in 2011, Chopra, a blogger from the CFPB, deems it possibly “too big to fail” (Chopra, 2012, para. 2). The theory references financial institutions that are so large and interconnected that their failure would be detrimental to the entire economy. Thus, the government should bail them out if the institutions were to collapse. Analogously, the student loan debt slows down borrowers’ ability to start a business, buy a home, or otherwise reinvest in the economy. If the student debt market is too big to be self-sustainable, a bailout would manifest itself in debt forgiveness programs at the expense of tax payers.

The bubble and “too big to fail” postulates warn how detrimental student loans can be on society. Because of the importance of higher education, the size of the student loan debt market, and the recent increase in student loan default, I first consider the federal student aid components and loan allocation process. After understanding the process, I determine the nature of study for this thesis.

## **Federal Student Aid Components and Allocation Process**

The Higher Education Act of 1965 (HEA '65) began federal student aid. Under the HEA '65 and future reauthorizations, Congress and ED defined student aid types and the student loan process. This section first outlines the changes in the HEA and then discusses the benefits and drawbacks of different federal aid types and the loan allocation process.

### *The History of Higher Education Student Assistance*

The Higher Education Act of 1965 (HEA '65) continued a pre-existing link between policy and higher education financing. Public policy and higher education financing first became intertwined when President Lincoln signed the Morrill Act<sup>3</sup> into law in 1862 (Loss, 2012). Since establishing the Morrill Act, the government's involvement in higher education funding continued to increase through legislation like the GI Bill<sup>4</sup> in 1944 and the National Defense Education Act of 1958<sup>5</sup> (Hannah, 1996). Then, HEA '65 "brought together a variety of [these] existing student aid programs designed to meet earlier national education needs" (Hannah, 1996, p. 503).

Key amendments structured present higher education policy. Between 1965 and 1992, multiple amendments were made to HEA '65 which included the introduction of Sallie Mae and Pell grants. Throughout the next 30 years, amendments fluctuated between tightening and loosening borrowing regulations, such as income caps, interest

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<sup>3</sup>Morrill Act: Signed into law by President Lincoln, the Morrill Act of 1862 provided each state 30,000 acres of public land to encourage the establishment of higher education institutions to school people in agriculture, home economics, mechanical arts, and other professions.

<sup>4</sup>GI Bill: Signed into law by President Roosevelt, the Servicemen's readjustment Act of 1944 (known as the GI Bill of Rights) gave veterans financial support to attend higher education institutions.

<sup>5</sup> National Defense Education Act: NEA encouraged scientific schooling in response to the United States-Russia space race.

rates, and loan discernment (Hannah, 1996). In 1992, Congress reauthorized HEA which Susan Hannah suggests shifted Title IV's purpose from providing need-based educational financing assistance to broadening the student loan consumer base (Hannah, 1996). From 1992 to 2008, the number of Pell grant recipients remained small, denying the neediest group of potential college students a federal financial cushion. On the other hand, student loan legislation allocated more money to a wider range of potential college students. In 2008, President Obama and Congress increased the number of grant recipients and attempted to include more financially needy students in the HEOA to refocus the purpose of financial aid ("Student Loans," 2014).

While HEA '65 includes six sections or "Titles," this thesis focuses on the amendments to "Title IV, Student Assistance," from its inception to date. Title IV outlined federal grants and scholarship opportunities, federally subsidized Stafford Loans, and work-study programs (Higher Education Act of 1965 [HEA '65]). The following section details each type of financial aid.

### *Definitions under Student Assistance*

Students pursuing postsecondary education can attain many types of financial assistance in the form of a gift, loan, or work-study. Federal and state governments as well as private institutions provide student assistance. Typically, federal loans have fixed interest rates while private loans have variable interest rates (The Student Guide, 2010). Below are the most relevant types of student assistance along with benefits and drawbacks of each.

- **Federal Pell Grant** (Pell grant): A Pell grant does not have to be repaid and is awarded to undergraduate students who demonstrate financial need, which is usually determined by the student's family income. While Pell grants are ideal for financially needy students, from a government perspective, it is the riskiest aid type because of the initial upfront cost with no explicit monetary payback. Hence, the federal government is investing in a student whose future impact on the economy is unknown (Barrow, L., Brock, T., & Rouse, E. 2013).
- **Work-study Program** (work-study): Work-study programs allow a student to earn money to pay for his/her education. The government considers the student's financial need in awarding students participation in work-study programs by providing funds to institutions to subsidize student wages. Work-study encourages students to earn money for provided services. Although the federal government incurs an upfront cost, student employees are contributing to the economy (Barrow, L., Brock, T., & Rouse, E. 2013). Work-study accounts for less than 1% of federal aid, a historically standard amount, meaning it impacts a small percentage of aid recipients (Baum, S., & Payea, K., 2013).
- **Federal Perkins Loans** (Perkins loans): A Perkins loan is lent by individual colleges to undergraduate or graduate students. Federal Perkins Loans are the optimal loan. The federal government provides colleges with limited funds to provide a few of the neediest students subsidized loans at a lower interest rate. The loan also has an abbreviated repayment plan compared to other federal student loans and offers better cancellation provisions<sup>6</sup>. Since the government

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<sup>6</sup> A portion of Perkins Loans can be forgiven if borrowers become full-time teachers in low-income elementary or secondary schools under The National Defense Education Act (FinAid, 2014).

makes less money on the loan, its benefits are not spread among much of the borrower population, consistently accounting for less than 4% of borrower student aid (“Student Loans,” 2014; Baum, S., & Payea, K., 2011).

- **William D. Ford Direct Stafford Loans** (Direct Loans or Stafford loans): Direct loans are lent directly from the ED to the student, rather than from a financial institution originating the loan. The Direct Loan can be either *subsidized* or *unsubsidized*. For a subsidized loan, the ED pays interest on the loan until the student graduates from college provided the student demonstrates financial need. For an unsubsidized loan, the student pays the accrued interest on the loan once he/she has graduated from college, and the student does not need to demonstrate financial need. Colleges determine the amount of aid an individual receives. Direct Loans simplify the loan allocation process by making the postsecondary institution a one-stop-shop where the student receives loans and asks questions. However, the student is unable to shop the loan offer because the loan is only provided by the ED (“Student Loan Basics,” 2014).
- **Direct PLUS Loans** (PLUS Loans): PLUS Loans are unsubsidized direct loans provided from the ED to graduate/professional students and parents of dependent undergraduate students. While the ED does not require financial need, the borrower must display a good credit history. PLUS loans are beneficial because they allow parents to invest in their child’s future as well. Since PLUS loans cannot be transferred to the student, it protects student borrowers from having larger debt loads due to their parents’ decision, although many students are held jointly responsible by their parents (*How America Pays for College 2012*, 2012).

It is also easier for the federal government to vet parent borrowers because they have an existing credit history to be evaluated. A drawback to the additional borrowing option is that parents also may not realize Stafford loans have a lower interest rate, 3.86% versus 6.14%. Also, there are alternative methods for a parent to borrow for their child that is tax deductible, such as home equity loans (“Student Loans,” 2014).

- **Direct Consolidation Loans** (Consolidation Loans): Consolidation Loans allow students to combine multiple federal student loans into one loan. However, PLUS loans cannot be transferred to the student. Loan consolidation simplifies the loan process which helps financial management skills and provides students an opportunity to pay a lower interest rate on their loans. However, if borrowers are not savvy in financial literacy, they may consolidate when it is not beneficial. For example, if the borrower has several loans with a varying range of interest rates, it would be advantageous to accelerate the payment of the high interest loan rather than consolidate and pay more in the end (“Student Loans,” 2014).
- **Private Loans:** Private Loans are issued from non-government institutions. Private loans are unsubsidized and usually require the student to have a good line of credit. Private loans cannot be consolidated with federal loans. Private loans give students an alternative method to finance higher education when federal student loans are not sufficient. On the other hand, private loans have higher interest rates, less oversight, and less transparent payback plan. Also the student has to work with banks or other lending institutions rather than their college (*How America Pays for College 2012*, 2012).

- **Federal Family Education Loan Program (FFEL Loans):** FFEL Loans encompass Stafford Loans, PLUS Loans, and Consolidated Loans from private lenders rather than government institutions. FFELP Loans enlist multiple parties. Similar to direct loans, the school determines financial eligibility. Then there is a lender, guarantor, servicer, collection agencies, and a secondary market. The lender is a private institution, like Sallie Mae. The guarantor, a non-profit organization, works with the ED, lenders, services and schools to ensure students repay their loans. The servicer collects the loan payments and assists and answers questions concerning students' loans. The collection agency specializes in delinquent/defaulted loans and is hired by lenders to recover loans. Lastly, the secondary market buys loans from lenders to provide capital for lenders to originate the loans. The benefit to FFEL Loans is the power of choice. The frustration many students felt was the confusion in navigating multiple parties ("Student Loan Basics," 2014). FFEL Loans have not been offered since 2010 ("Student Loans," 2014).

Each federal aid type could be advantageous for a certain borrower or parent. The key to maximizing the federal aid a student receives is his/her ability to navigate the choices.

Overall, students receive Stafford loans when they apply for federal financial aid—making up over 40% of federal aid in 2010—meaning the allocation process for Stafford loans affects the majority of aid recipients (Baum, S., & Payea, K., 2011).

### *Evaluation of Student Aid Types*

After considering the loan options, there are two problems with the current student loan structure. First, there are too many types of student aid (Dynarski & Scott-Clayton, 2013). Currently, the ED allows students to borrow from a variety of debt instruments. Choice is preferred in a transparent market where the consumer fully understands his/her options. For student financial aid, each instrument has numerous intricacies which the ED unfairly expects high school graduates to understand. I applaud the ED, along with President Obama and higher education advocacy groups who are working to provide clarity in the market through better financial aid counseling. However, maintaining a laundry list of financial aid types is still worrisome. Second, the federal financial aid that is the best value for a student is misaligned with the aid that is the best value for the lender, either the ED or private institutions. Namely, work-study and Perkins Loan programs account for 5% of all financial aid but provide students with the highest return on educational investment. However, other student loan types have higher interest rates, costing students much more. Economically, in order for the ED to sustain a federal aid program, they have to charge students more; socially, the federal government should also work to benefit borrowers.

### *Student Loan Process*

A borrower, student or parent, must follow certain steps to obtain student assistance, federal or private. To obtain federal assistance, the borrower outlines the cost of attendance and financial need. Private student loans are obtained similarly to any



domestic loan, and thus the process parallels other loan processes (The Student Guide, 2010). Then after the borrower graduates, he/she follows a repayment plan.

To apply for federal student assistance, a student completes a series of steps. First, a student must submit a Free Application for Federal Student Aid (FAFSA) for the government to determine the financial neediness of the student. FAFSA determines eligibility for grants, work-study, state aid, and loan type. After submitting the FAFSA, the ED sends the student a Student Aid Report (SAR) with a summary of the FAFSA and Expected Family Contribution (EFC), which determines the eligibility for different student assistance programs. The SAR is sent to the postsecondary institutions that the student has indicated on the FAFSA. The postsecondary institution determines eligibility and the amount based on a student's *financial need*, the difference between EFC and COA (The Student Guide, 2010). Next, a student receives an award letter outlining the student's financial aid package which explains payment schedules and expense breakdowns. Once accepting the loan, the student commits to the payment schedule and the loan provider commits to the allotted amount<sup>7</sup>. Lastly, the student receives the money in two disbursements ("Smart about College", 2011).

To qualify for any federal student aid, students have to meet specific basic requirements. Basic eligibility requirements to receive federal financial aid are:

- Demonstration of financial need;
- Proof of U.S. citizenship or non-citizenship eligibility;
- A valid Social Security number;
- Registration with the Selective Service (males only);

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<sup>7</sup> Since HEOA, the ED is the only federal loan provider.

- Showing of enrollment or acceptance for enrollment by an eligible degree program;
- Part-time enrollment to receive Direct Loans;
- Maintenance of satisfactory academic progress;
- A promise to spend aid for only educational purposes; and
- Demonstration of a high school diploma or General Educational Development (GED) certificate (Smart about college, 2011).

These basic requirements have changed only slightly since 1965, except for the FAFSA report, which the government added through HEA '92. Once the government decides that the student meets the criteria, the government assesses financial need to determine federal student aid allocation (The Student Guide, 2010).

After graduation, a borrower chooses one of the four types of repayment plans: (1) standard repayment; (2) extended repayment; (3) graduated repayment; and (4) a percentage of income repayment. Also, a borrower is entitled to change repayment plans during the repayment period. A borrower under the standard repayment plan pays a fixed monthly amount of the loan for up to 10 years. The extended monthly repayment plan copies the standard repayment plan except it allows borrowers 12 to 30 years to reduce the size of repayment but increases the lifetime total amount paid. The graduated repayment plan begins with smaller monthly payments and increases every two years lasting 12 to 30 years.

Lastly, there are three plans that consider a borrower's income. The income-contingent repayment plan pays a percentage of the borrower's income and monthly payments are adjusted as the borrower's gross income grows for Direct Loan borrowers.

This is similar to the Income Sensitive Repayment plan offered to FFELP borrowers.

Income-Based Repayment caps monthly payments at a lower percentage of discretionary income instead of gross income (“Student loans”, 2014).

### *Evaluation of Student Loan Process*

While the standardized student loan process connects a number of students with financial aid, it is overly complex and inefficient. First, the FAFSA is a daunting application which rivals a 1040 tax form in length. It takes approximately three hours to complete and is usually filled out incorrectly by students not familiar with the financial aid process. The document should be streamlined to incorporate only unavailable information about a potential borrower (Dynarski and Scott-Clayton, 2013). The FAFSA’s intimidation causes many students to miss aid opportunities. In 2007, 2.3 million students were not considered for Pell grant aid because they did not complete the FAFSA (Abernathy et al. (2013).

Second, the financial equation colleges use to determine aid eligibility and amount ineffectively evaluates students. While Direct PLUS borrowers have sufficient credit history to be screened, the ED has less specific information for student borrowers (Abernathy et al., 2013). Dynarski and Scott-Clayton (2013) argue that the ED lacks structure in ranking student eligibility, resulting in the student aid agency incorrectly identifying the types of aid, gifts, unsubsidized loans, subsidized loans, or a combination of any they award students. The equation also does not measure individual characteristics, like students’ financial knowledge or motivation.

## **The Nature of Study**

The purpose of this thesis is to evaluate the effectiveness of the federal Stafford student loan allocation for undergraduate students. The role of Stafford loans is interesting since they are taken on by the majority of loan recipients. As Dynarski and Scott-Clayton (2013) highlight the inefficiency of the student loan process and borrowers, like Christen Kauffman relays distress in repaying her student loan amount, the study tests whether the two are linked. Loan allocation is measured by means of federal loan limits, the maximum amount a student is about to borrow, and a student default rate reflect student's problems repaying loans.

Since the ED locks individual student borrower information for privacy reasons, I use public aggregated data to determine if loan allocation or any other institutional factors impact student loan default. From the study, I attempt answer two questions:

1. To what extent does student loan allocation impact student default rates?
2. Is loan allocation or any other institutional factor significant contributors to student loan default?

If loan allocation or any other institutional factor is the driving factor of student loan default, then ED can depress default through restructuring institutional characteristics, like the amount or types of aid offered. However, if institutional factors do not significantly drive student loan default, the ED should create an alternate method of screening potential borrowers based on their individual characteristics.

My study uses empirical analysis to determine the impact of federal loan limits and other institutional factors on student loan default rates. To perform the study, I first consider available literature on federal loan limits, undergraduate student default rates,

and other potential institutional factors. Through the literature review, I build the foundation for my study by analyzing existing research and evaluating controversial findings. Next, I outline the methodology of my study to explain the process for selecting and measuring the data used in the empirical study. Then, I report the results of my analysis and determine statistically significant and other relevant relationships. From my findings, I answer my two questions. Lastly, I describe three popular higher education financing alternatives and conclude how loan allocation can be reformed.

## **CHAPTER TWO: LITERATURE REVIEW**

This section discusses the literature surrounding student loan allocation, student loan default rates, and other higher educational institutional factors. To begin, I describe the relevance of student loan program maximums in loan allocation. Second, I provide a condensed history of federal student loan program maximums and discuss the controversy around them. Next, I describe the impact of student loan default. Lastly, I describe other potential institutional drivers of student loan default.

### **Relevance of Student Loan Program Maximums**

Under the HEA '65, Congress established program loan limits to regulate federal loan allocation. The loan limits established the maximum amount colleges could provide to aid-eligible students. The loan limits are tailored to several characteristics, including the type of student loan, the nature of the loan (i.e., whether it is subsidized or unsubsidized), the borrower's profile, and the dependency or independency of the student

(HEA '65; "Student loans," 2014)<sup>8</sup>. Congress created annual and aggregate loan limits (program maximums), which are defined below:

- **Annual loan limit:** The annual loan limit specifies the maximum loan amount a student can borrow depending on year or credit status when attending a higher education institution. The annual loan limit changes as a student transition from freshman to senior year.
- **Aggregate loan limit (program maximum):** The program maximum is the largest loan amount a student can borrow throughout his/her undergraduate career ("Student loans," 2014).

Also, students can borrow up to the program maximum but may be constrained by individual borrowing maximums set by postsecondary institutions according to student financial need and budget. Hence, the individual maximum ranges from zero to the program maximum (Wei & Skomsvold, 2011). This thesis analysis uses program loan limits for two reasons: (1) they encapsulate all underlying annual loan limit changes and (2) program loan limits are positively correlated with individual limits (Historical Loan Limits, 2014).

Program maximums show the changes in annual loan limits since Congress increases the limits proportionally. Hence, program loan limits represent increases in the underlying years as well. When borrowers begin repayment, they pay interest on the total amount they borrowed, not on their different annual loans individually.

More importantly, program limits are positively correlated with individual limits. NCES reports published in 1995 and 2013, 65% of public and private postsecondary institutions ranked increasing program limits as a reason to increase individual maximum

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<sup>8</sup> After HEA '92, PLUS loans have no borrowing limit ("Student loans," 2014)

allocation when considering student financial need (Lewis & Westat, 1995; Snyder & Dillow, 2013). Additionally, in *Borrowing at the Maximum* (2011), Christina Chang Wei and Paul Skomsvold note trends in student borrowing at the loan limits in 2011. Wei and Skomsvold highlighted the trend of student borrowing in relation to loan limits from the 1980s to 2008. The authors found that between 40-50% of borrowers have taken out the program's maximum amount. Also, many reports, such as those authored by the American Institutes for Research, use program maximums as the proxy of loan limit effects and amounts students borrow.

As the majority of students borrow at or near loan limits, program maximums allow Congress and the executive branch to manage the expansion and consolidation of the student loan debt market. Thus, program loan limit legislation not only considers student need but also depends on political initiatives.

### **History of Federal Student Loan Program Maximums**

Congressional legislative action resulted in incremental increases to program and annual loan limits presented in Figure 1. Congress enacted the first loan limit increase within the 1986 HEA reauthorization process. Under President Reagan, 1986 legislation established a need test to determine student eligibility which limited borrowing to the minimum amount students needed. However, the legislation increased program loan limits by 38% in order to ensure future loan program growth for both subsidized and unsubsidized loans limits. Reagan began the transition from grant to loan based aid. By the reauthorization of 1992, the ideal federal student aid program was disintegrating. Pell grants were costly to the federal government and did not keep up with rising costs of

college, forcing students to become more reliant on federal loans. With a desire to cut federal spending, policy makers—including President George H. W. Bush—abandoned initiatives to focus federal aid on Pell grants which shifted primary federal aid beneficiaries from the lower-income students to middle- and upper-income students by raising loan limits an additional 31% for dependent students and 100% for independent students (Cervantes et al., 2005). The official move from a grant to a loan centric financial aid policy resulted in exponential growth in the number of students borrowing loans and the amount students were allowed to borrow (Hannah, 1996). During the HEA Reauthorization of 1998, President Clinton exhibited fiscal discipline by not raising federal loan limits but did raise the Pell maximum (Cervantes et al., 2005). Then, in 2007, President Obama declared the purpose of federal aid was to help all students achieve higher education. In turn, he drastically raised student loan limits—by 35% and 25% for dependent and independent students, respectively—and raised the Pell grant to compensate for the cost of attending higher education (Scott, 2011).

**Figure 1 Percent Increases of Program Maximum by Dependency Type from HEA Reauthorizations**

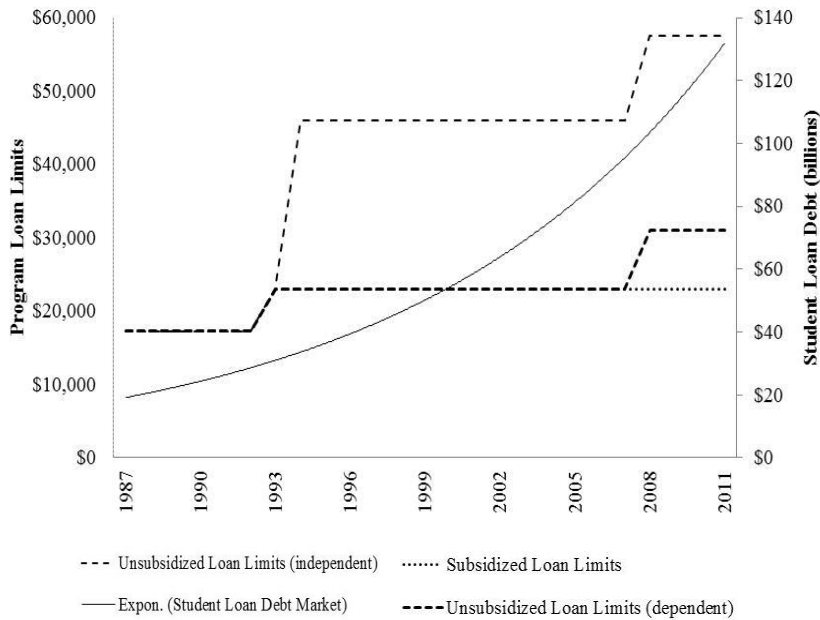
Year	Legislation	Rationale	Dependent Students	Independent Students
1987	HEA reauthorization of 1986	Growth of Stafford Loan Program	31%	31%
1993	HEA reauthorization of 1992	Massive reduction of Pell Grants	31%	100%
1997	HEA reauthorization of 1998	No program limit increase	0%	0%
2007	HEA reauthorization of 2005	Increase in cost of attending college	35%	25%

Note: Adapted from “Student Loans,” (2014). *FinAid*. Retrieved from <http://www.finaid.org/loans/>



While Congress and the executive branch strived to increase financing for students' higher education in a cost-effective manner, the reauthorizations that grew program maximums propelled student loan debt levels. As shown in Figure 2, student loan debt levels are strongly correlated with program loan limits implying that students take advantage of program limit increases. Policy makers should be conscious of this association to ensure debt levels do not escalate to dramatic levels.

**Figure 2 The relationship between program limits and student loan debt level**



Source: "Student Loans," (2014). *FinAid*. Retrieved from <http://www.finaid.org/loans/>

## **Controversy of Program Loan Limits**

Although three out of four reauthorizations increased student loan limits, there have been numerous debates surrounding the effectiveness of the legislation. Generally, Republican administrations try to direct federal aid away from costly grant aid to revenue generating student loan programs. Democratic administrations have attempted to expand aid to include more lower-income students either through Pell grants or federal student loans.

In the following paragraphs, I describe both advantages and drawbacks of loan limits as outlined by key influencers—policy makers, political organizations, and academia.

### *Benefits of Loan Limits*

Policy makers, much like Congress; certain political organizations, like the New America Foundation (NAF); and academia applaud the role of loan limits. The Government Accountability Office (GAO), Congress' auditing arm, endorses student loan limits as a uniform method to regulate student borrowing. The GAO cites increased enrollment and borrowing numbers for full-time college programs to praise Congress for successfully accomplishing two initiatives through student loan limits increases: (1) minimizing excessive student loan debt per borrower and (2) enabling students to finance their education through increased access to capital (Scott, 2011).

Political organizations, such as the New America Foundation<sup>9</sup> (NAF), also voice supporting viewpoints on loan limits. The non-partisan organization explains that loan limits control student borrowing and inhibit students from overborrowing. However, NAF concedes that loan limits are not the only avenue for the federal government or

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<sup>9</sup> The NAF is a non-partisan think tank with one of the most vocal stances on student aid.

colleges to monitor students' accumulation of student loans. With limits, NAF proclaims that colleges need to do a better job providing a multi-year price schedule, transparent financial need, and cost-of-attendance calculation to their students.

In the *Journal of Economic Perspective*, Avery and Turner (2012) claim that capital availability, especially through student loans, is imperative to encourage students to invest in higher education. In addition, the authors encourage loan limit increases because of the increased cost of attending higher education. Many other researchers substantiate Avery and Turner's claim by pointing to the positive correlation between the increase in access to capital—through loan limit upticks—and the increase in student enrollment (Akyol & Athreya, 2005; Garriga & Keightley, 2007).

#### *Disadvantages of Loan Limits*

While some policy makers, political organizations, and some academics champion loan limits, others claim loan limits are an ineffective tool in managing the amount students borrow. To start, President Obama has taken an active role in higher education and how students pay for it. The President has recently denounced the successfulness of the current loan-allocation process. While President Obama views student loans as an avenue to increase college enrollment numbers, he highlights how current program limits do not match the quality of the postsecondary institution. Hence, he states that student borrowing is reinforcing the bloated debt total and high student loan default rates. Thus, while the legislative and executive arms of government are aligned in their desire to bolster student aid, the two branches are at odds over the efficacy of the current program limits (Obama, 2011).

Within academia, opponents of loan limits disfavor randomly crafted loan limits and unproductive individual student loan allocation. In research under the Federal Reserve Bank of St. Louis, Garriga and Keighley (2007) support the idea of capped borrowing but argue that loan limits come up short because they are arbitrarily created and not indexed according to the cost of attendance increases or changes in inflation. Through their study of education policy, Garriga and Keighley assert that students are not receiving the amount of aid they actually need. They further assert that loan limit increases should better track financial-need changes of students.

Additionally, some in academia worry that loan limits unsuccessfully tailor individual loan amounts to students. In the *Economics of Education Review*, Hansen and Rhodes (1988) voice concern over the government haphazardly allocating extra capital without understanding undergraduate borrowers. Through a study of borrowers with varying amounts of debt after the HEA reauthorization of 1986, Hansen and Rhodes determined that loan limit increases could amplify the amount borrowed by risk-prone undergraduates who are uncertain of future earnings. Because student loans are uncollateralized, their research revealed the challenges faced by lenders, such as the federal government and commercial banks, in appropriately vetting borrowers to determine risk appetite and reliability to pay back the loan (Hansen & Rhodes, 1988, Garriga & Keightley, 2007). Although Avery and Turner (2012) acknowledge loan limits for increasing college enrollment, the authors agree with the early findings of Hansen and Rhodes.

### *Loan Limit Literature Implications*

Since 1992, loan limit legislation has wrestled with promoting college enrollment and mitigating excess borrowing. At inception, the HEA '65 established federal student loans to help low-income students to pay for college and created program loan limits to keep that fraction of students from overborrowing. As the 1992 reauthorization expanded program limits and borrower eligibility requirements, it became harder for Congress, the ED, and colleges to predict perfect individual borrowing amounts because the student loan market and college landscape changed. In the student loan market, a greater number of diverse students are involved in the process, and cost of attending college surpassed predictions. Hence, as shown by Hanson and Rhodes (1988); Garriga and Keightley (2007); Avery and Turner (2012), it is difficult to subjectively classify current loan allocation method as good—because it is statistically shown to increase college enrollment—or bad—because it allows Congress to arbitrarily distribute debt to students.

### **Impact of Student Loan Default**

A student enters default if he/she fails to repay a federal student loan according to the terms agreed to in the promissory note. As a general rule, a student has defaulted on student loan after 270 days of a missed payment<sup>10</sup>. If a borrower defaults on a student loan that is owned by ED, the borrower faces the following consequences: loan balance due in full; loan collection fees; 15% deduction out of his/her paycheck; Social Security, disability income, and state and federal tax refunds taken; ineligibility for federal aid; and ruined credit score. The borrower recovers from default by repaying the loan in full,

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<sup>10</sup> Between the first skipped payment and 270 days, the borrower is in a state of delinquently (“Student loans,” 2014).

entering a loan rehabilitation program, or consolidating out of default (“Managing Default,” 2014).

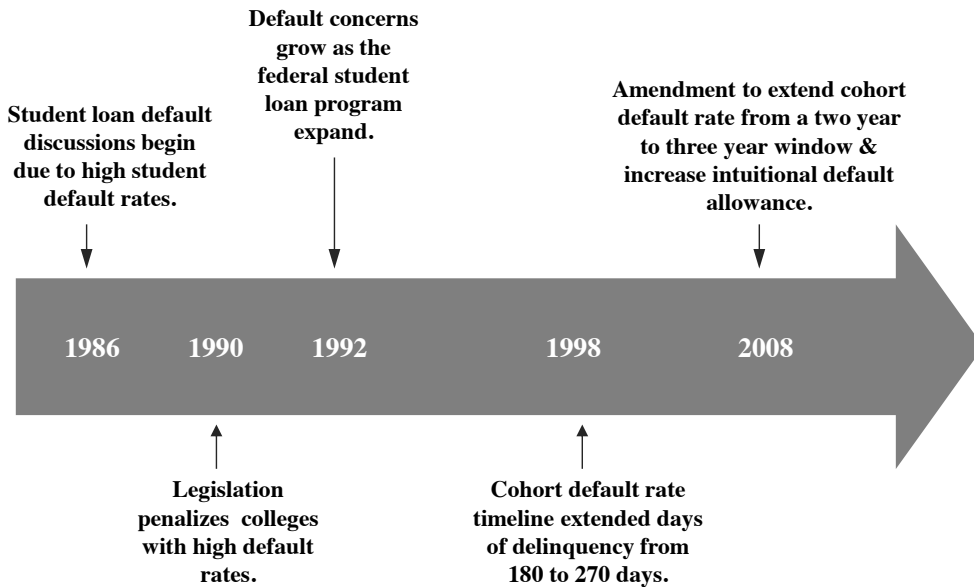
Annual default rates are measured by the official two-year cohort default rate (cohort default rate). The cohort default rate is the aggregated number of borrowers in default who entered repayment on a certain Direct Loan or FFEL Loan two years prior. For example, the fiscal year (FY) 2011 cohort rates were released in 2013. To expand payback period window, the HEOA of 2007 requires the ED to also calculate and report three-year cohort default rates beginning in 2009 (“Two-year Official Cohort Default Rates for School,” 2013). By accounting for an additional payback year, the policy change better reflects the reality of student prepayment problems.

Congress crafts student loan default policy by making incremental changes to the HEA. Figure 3 presents the historic events that impacted default loan policy. First, during the 1986 reauthorization of HEA, student loan default rates became a recurring topic. Because student loan default rates were obscenely high, over 20%, Congress planned to enact federal legislation that penalized colleges with high default rates (Gross et al., 2009). Then, beginning in 1990, the government declared colleges with student default rates greater than 25% over three years or over 40% in one year ineligible to participate in federal student loan programs. The legislation ensured college accountability for student default behavior (Volkwein & Szelest, 1995). However, Congress’ concerns grew after the expansion of student loans in the 1992 reauthorization. In 1998, Congress extended the amount of days a student could miss a payment from 180 days to 270 days. The shift more accurately represented the fraction of the student cohort who struggled to repay student loans (Gross et al., 2009). Years later, Representatives Timothy Bishop (D-

NY) and Raul Grijalya (D-AZ) expressed skepticism about default calculation<sup>11</sup>. In response, Congress' 2008 reauthorization act further extended the default calculation window to three years.

While changes in the HEA continue to increase college's accountability for default rates, Congress' default rate caps place little pressure on most colleges. For example, less than 2% of colleges surpassed the student loan threshold while 10% of student borrowers went into default ("Default Management," 2013). Hence, the majority of colleges are unaffected by Congressional sanctions but are more likely to help students overborrow.

**Figure 3 The Progression on Default Rate Policy**



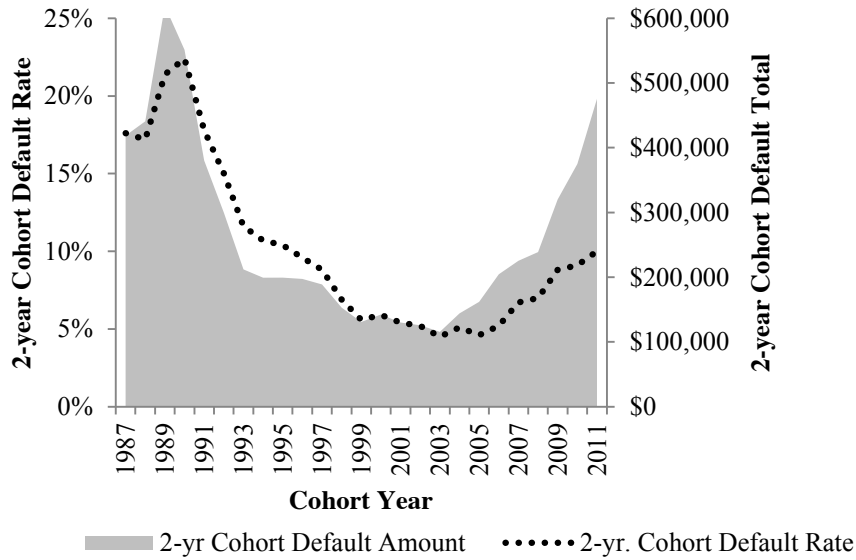
<sup>11</sup> Timothy Bishop (D-NY) and Raul Grijalya (D-AZ) introduced the amendment encompassed in the HEOA that extends the default window calculation to three years.

Student loan default has a high social cost to policymakers and students. On the students' side, student loan default can trap students because they cannot declare bankruptcy and abandon their debt. Hira et al. (2000) found that once students incur student loans, they are reluctant to invest in the economy through homes, cars, or credit cards purchases because they fear entering default. Forbes writer Halah Touryalai affirms her own belief that student loan debt inhibits economic growth. Touryalai relays quote from CFPB Director Richard Cordray discussing the inability for borrowers to take on other loans because of student loan debt and lack of credit (2014).

On the policy makers' side, student loan default affirms misallocation of federal loans. Policy makers and academia largely measure productivity of federal student loan programs by default rates of student loans (Gross et al., 2009). Over time, two-year cohort default rates and default amounts are lower than they were during the late 1980s, but have recently increased since the Great Recession, as seen in Figure 4. Both policy makers and academia have voiced concern over the sharp increase in student loan default amounts that is up 111% since 2007 (*Two-Year Official Cohort Default Rate*, 2013). Throughout the last five years, policy influencers have attempted to better understand underlying causes of student loan default.



**Figure 4 Two-yr. Cohort Default Rate and Amount**



Note: Adapted from “Baum, S., & Payea, K. (2013). Trends in student aid: 2013.”

### Potential Causes of Default Rates

In addition to loan limits, education research has isolated potential drivers that impact student loan default. One driver is the individual borrower characteristics. The other five drivers are related to institutional factors: (1) higher education cost of attendance; (2) number of loan recipients; (3) number of Pell Grant aid recipients; (4) the economy’s view of debt; and (5) the state of the economy (Goss et al., 2009; Dynarski & Scott-Clayton, 2013).

#### *Individual Characteristics*

Academia has released extensive research on the role of student borrower characteristics and background. The characteristics include: age, race, gender, and family socioeconomic standing. Research findings are closely aligned regarding the impact of

each characteristic on the chance of default. Almost all research positively correlates a student's age with chance of default, often citing causes such as greater financial obligations and less external monetary support (Gross et al., 2009; Choy & Li, 2006). Research on the borrower's race concludes that borrower's ethnicity is the greatest predictor of default. Students of color, especially African Americans, have a greater probability of default than their Caucasian peers. Contrastingly, gender appears to have little correlation with probability of default. Lastly, studies on the borrower's family's socioeconomic standing suggest that students of higher income families are less likely to default because of a familial financial safety net. Thus, empirical research largely agrees on how changes in borrower characteristics affect borrowers' likeliness of default.

Financial planning can also play a role in the borrower's likeliness of default (Gross et al., 2009). Gross et al. (2009) cited Dynarski's (1994) previous studies to validate the role of money management in the probability of student loan default. Sallie Mae (2012), Volkwin and Szelst (1995), and other studies agree with Dynarski's (1994) perspective on the importance of money management skills, especially as student borrower debt expands into other consumer debt types (e.g. credit cards, auto loans, etc.). Other types of consumer loan debt, particularly credit card debt, gain popularity as students attend college, indicated by the 60% of college seniors who owned a credit card in 2012, up 4% since 2011 (Sallie Mae, 2012).

### *Cost of Attendance*

The cost of attending college has increased overtime, forcing students to invest more in their education. As students seek optimal educational experiences, the cost of college has simultaneously decreased in importance. Different influencers have worked

to help students surmount the cost threshold. Congress has increased loan limits in order to match college cost increases. The ED works to educate students on loan opportunities and helps them complete their FAFSA applications (“Student Loans,” 2014).

Additionally, students have responded to upswings in college cost of attendance by taking on more debt. Gross, Cekic, Hossler, and Hillman (2009) as well as Avery and Turner (2012) agree students’ responses to increased tuition fees have propelled them into default.

### *Number of Loan Recipients*

Researchers argue that the number of student aid recipients either increase or decrease default rates. In the *Review of Higher Education*, Hillman (2014) reports increased popularity of higher education, coupled with federal and state efforts to increase college completion programs, expands the number of aid-reliant students. Hillman notes that the growth in the borrower population results in more students unable to repay greater loan amounts. Hannah (1996) supported this notion years earlier when evaluating the inclusion of merit-based scholarships after the HEA Reauthorization Act in 1992. Hannah found dangers in expanding the number of loan recipients because more students unaware of their future earnings were included in the loan pool which increased default rates. Dynarski and Scott-Clayton (2013) add that increasing the volume of students unnecessarily receiving aid has caused the student loan debt total to bloat to unreasonably large levels.

Contrastingly, in the *Policy Sciences Journal*, Singell and Stater (2006) view growth in loan recipients as a way to lessen default rates. The authors note that recipients

who are not in the lower class and qualify for aid are more likely to repay their debt. Thus, more borrowers lessen the riskiness of the pool of potential defaulters.

### *Number of Grant Recipients*

Since 1965, policy makers and academia have conducted substantial research around federal grant aid. Keane summarizes the findings that suggest low income students need grant support to get over the college cost threshold, and the decrease of grant aid recipients increase these students' chances of default (2002). Hillman (2014) argues that the decrease in grant funding has increased student reliability regarding student loans, thereby increasing the pool of potential defaulters. Interestingly, Hillman reports that students with higher amounts of grant aid have a greater chance of defaulting because the neediest have the least amount of external support—family, friends, or otherwise— to finance student loans.

### *The Economy*

The state of the economy also plays an influential role in determining a student's likelihood of default. During a recession, for example, the amount of money students have to repay loans are greatly constricted. The Economic Policy Institute reports that students who graduated during the Great Recession struggled more with repaying their student loans (Shierholz, H. Wething, H. & Sabadish, N., 2012). They argue that not only are students' financial resources constrained, but their possible support systems –family members or savings—were constrained as well. Moreover, Woo (2002) found that

unemployment increases a student's odds of defaulting since job loss negatively impacts financial resources used to pay student loan debt.

Additionally, student loan debt is only one type of household debt. Other household debt includes car loans, credit card debt, and mortgages. As the economy goes through peaks and troughs, household comfort for managing debt varies. During recessions, at times, households choose to pay off some debt over others. For example, during the economic downturns, some people choose to pay off their car loans rather than their mortgage payment (Flint, 1997). Hence, the level of comfort the economy has with managing debt can indirectly impact student loan default rates.

### *Significance of Default Literature*

Research has placed varying weights on the six variables to suggest which are more important in predicting student loan default. While much research sites the individual's characteristics as the most relevant driver of student default (Gross et. al, 2009; Flint, 1997), the other institutional drivers play a role in students' ability to pay back loans. Similarly to loan limits, it is difficult for Congress, the President, or academia to subjectively rank and prioritize potential default drivers.

## **CHAPTER THREE: METHODOLOGY**

In this section, I explain the steps in my data collection and analysis that lead to my final results, the isolated impact of student loan borrowing limits on two-year cohort default rate. First, I describe my data selection approach. Second, I summarize my research design and data collection. Next, I explain my data measurement process, multi-variable regression analysis. Then, I provide rationale for the variables I use to determine the relationship between student loan limits and student default rates. Lastly, I reference potential limitations of my research design.

### **Data Selection Approach**

In my data selection approach, I delineate terminology, specify my study's timeframe, and distinguish participants' profiles. To start, I narrow the focus of higher education institutions as an establishment that offers post-secondary education to undergraduate or graduate student. Within higher education institutions, I only concentrate on public and private schools. My definition of a public school is a state funded higher education institution built on a four-year program. Similarly, my definition of a private school is a not-for-profit higher education institution built on a four-year program. Because of incomplete for-profit, higher education institutions data, I only focus on not-for-profit higher education institutions that educate 88% of post-secondary students (NCES, 2012).

My data has a timeframe constraint to accommodate the student loan default rate relevance. Although the HEA depicted loan limit specifications and student default qualifications in 1965, higher education institutions did not monitor default rates until the

1987 cohort (“Student loans,” 2014). Thus, the study’s timeline begins in 1987 when Congress encouraged institutions to refocus on providing affordable education to students. The study ends in 2011, the most recent cohort default rate released. The data collection timeline was not constrained by loan limits because the ED oversaw allocated Stafford loans since inception (“Student loans,” 2014). Lastly, for the purpose of this study, I tailor my analysis to the aid-eligible undergraduate population attending either public or private schools.

### **Research Design and Data Collection**

My research design aims to correlate loan limits and other variables to default rates. To begin my study, I collect data samples which academics postulate impact the likelihood of students defaulting on their loans. Because I am studying and comparing the isolated impact of loan limits on public and private schools separately, I created a public school regression model and private school regression model. The two models allow me to separate and compare the characteristics of students who attend either institution. The models measure identical variables with numbers stemming from public or private institutions. I, then, compare the strength of the association between the dependent variable, cohort default rates, and the range of independent variables, namely student loan limits, to determine impactful drivers (Kleinbaum, Kupper, & Muller, 1988).

After considering the major drivers of student loan default rates, I compiled data through a range of public government sources. Any data related to higher education participants and institutions derive from offices under the ED or recent studies sponsored by ED. The offices include the Office of Postsecondary Education Policy, Planning, and

Innovation as well as FinAid. The studies include reports from NCES and the Information for Financial Aid Professionals (IFAP). The offices and studies have surveyed, aggregated, and updated facts/statistics about higher education since HEA indoctrination. Hence, they are the primary sources of other educational studies, such as the Project on Student Debt, validating data accuracy. Moreover, for economic data I utilize reports from the Bureau of Economic Analysis, the Bureau of Labor Statistics, and the Federal Reserve Board. Lastly, I note correlations between historical cohort default rates and other variables from the highlighted data the model to empirically report the role of loan limits on default rates.

### **Data Measurement Process: Multiple Regression Analysis**

I use multi-variable regression analysis because it is the optimal analysis tool to evaluate the relationships between variables both quantitatively and qualitatively. After selecting and classifying my independent and dependent variables, I run multiple regressions and analyze the significance of coefficients. I run correlation tables to ensure no independent variable measurements overlap and skew results (Kleinbaum, Kupper, & Muller, 1988).

To analyze the data, I apply industry standards to determine the significance of a regression statistic. I use a .05 level of significance. Correlations between variables should be less than .7, shown in Appendix A (Kleinbaum, Kupper, & Muller, 1988).

For the public school and private school regressions, I evaluate the models' based on the regression statistics: variable coefficients and probability of result. From there, I declare statistical significance of the public school model and private school model.



## **Rationale for Selected Variables**

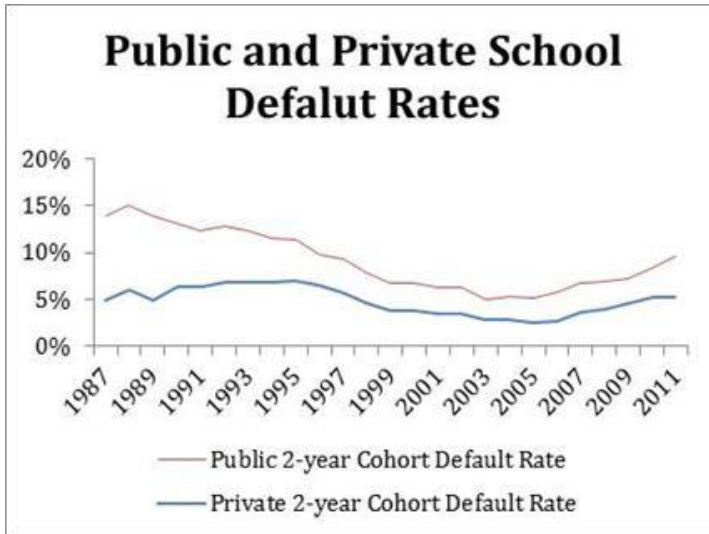
The public and private school models consider identical dependent and independent variables. The two-year cohort default rate is the dependent variable, meaning its outcome is measured against other drivers. The independent variables include loan limits and four other drivers of default rates highlighted by academia. The independent variables are grouped into either educational drivers or economic drivers. The educational drivers include amount of public/private loan recipients and amount of private/public Pell Grant aid recipients. The economic drivers include the Financial Obligations Ratio and unemployment rates. These specific drivers are chosen by considering two integral concepts: (1) variable representation within another variable and (2) level of variable significance. In this section, I describe the rationale and computation of the dependent variable, two-year cohort default rates as well as the independent variables, loan limits, other educational drivers, and economic drivers.

### *Two-Year Cohort Default Rates*

ED's archived default rate data sheets provided individual default rates for all U.S. higher education institutions. I compile the two-year cohort rates by separately averaging all U.S. public and private school two-year cohort default rates. While three-year cohort default rates better encapsulate borrowers' likelihood of default, I use two-year default rates over the three-year due to lack of historical three-year default rate data ("Default Management," 2013). Thus, two-year cohort default rates are the most consistent measurement of the extent students struggle with repaying student loans

(“Student Loan Basics,” 2014). Figure 5 shows the changes in public and private school default rates.

**Figure 5 Public and Private School Default Rates**



Note: Adapted from “Archive Two-Year Default Rates. Department of Education.”

### *Student Loan Limits*

FinAid provides annual and aggregate student loan limits by type (subsidized or unsubsidized) and student dependency status. Since independent and dependent students qualify for different loan amounts, I standardize loan limits by applying weights based on yearly dependency proportion breakdowns to the aggregate loan limit amounts.

Additionally, Congress establishes loan limits separately from higher education institution type, meaning loan limits are the same for the public school and private school model.

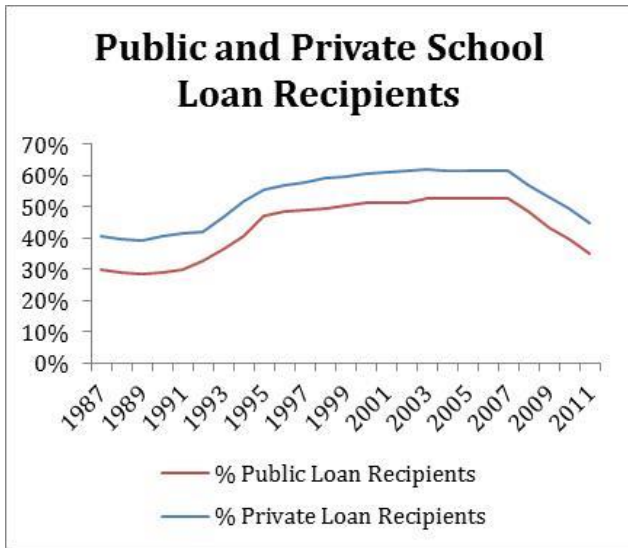
Variations in program loan limits also explain variation in individual loan limits and college cost of attendance. Hence, individual loan limit amounts are not included in the model because individual amount variation is encapsulated in loan limit changes. The relationship occurs for two reasons: (1) many students borrow at the program limits and

(2) colleges use program limits increases to construct individual loan limits. Thus, the program loan limit driver is more relevant to the study. Cost of attendance is not included in the model because Congress aims to construct program loan limits alongside increases in cost of attendance which causes the variables to have high collinearity which negatively impacts the model. Changes in loan limit are shown in Figure 1.

### *Other Educational Drivers*

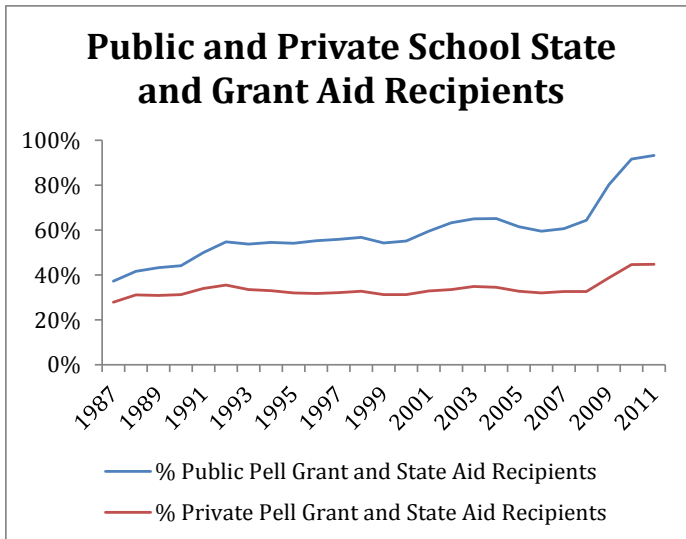
Academia highlights other trends in higher education that could affect a student's chance of repayment: the growth of student loan recipients and the decrease of grant aid (Gross et. al, 2009; Hillman, 2014). To test other educational trends, I collected the historical data from the NCES for amount of loan recipients as well as amount of Pell grant and state grant recipients (Snyder, Dillow, & Hoffman, 2009). I normalize both variables by using the ratio of number of public/private recipients to number public/private enrollment numbers each year. Furthermore, I solely use the number of Pell and state grant recipients because the amount per recipient remains constant year over year. Figure 6 and 7 shows the changes in public and private school loan and grant aid recipients.

**Figure 6 Public and Private School Loan Recipients**



Note: Adapted from “Baum, S., & Payea, K. (2013). Trends in student aid: 2013.”

**Figure 7 Public and Private School State and Grant Aid Recipients**



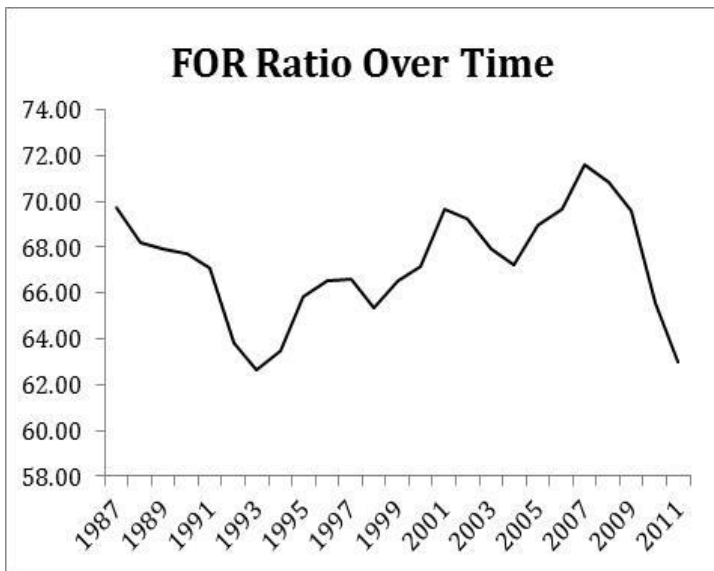
Note: Adapted from “Baum, S., & Payea, K. (2013). Trends in student aid: 2013.”

### *Economic Drivers*

The state of the employment economy impacts any debt borrower’s ability to repay loans. I account for changes in the economy through multiple drivers. First, I

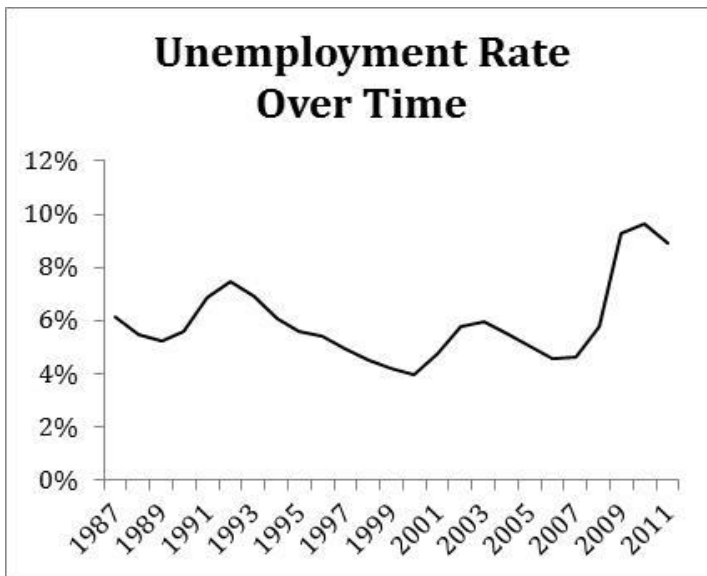
consider the financial obligations ratio (FOR) to account for consumers' comfort with debt. FOR estimates the ratio of household debt payment to disposable income and other financial obligations, such as automobile lease payments (Household Debt Service and Financial Obligations Ratios," 2013). Second, I used unemployment reported by the Census Bureau because academia has largely associated unemployment rates with likelihood of default because students have capital constraints (Woo, 2002). FOR Ratio and unemployment rates over time is shown in Figure 8 and Figure 9.

**Figure 8 FOR Ratio from 1987-2011**



Note: Adapted from "Household Debt Service and Financial Obligations Ratios, 2013."

**Figure 9 Unemployment Rate from 1987-2011**



Note: Adapted from "US Census Bureau Data, 2010."

### **Limitations**

There are three possible limitations to my study that could influence the results. The first limitation is that I narrowed the definition of a higher education institution to only not-for profit institutions. Knowing this, I will be aware of participant biases because of potential differing behaviors between students who attend for-profit higher education institutions and students who attend not-for-profit institutions. However, because it is a small portion of the post-secondary student population, I believe the randomization of NCES's study will still yield a normally distributed data sample.

The second limitation is the focus on default rates rather than delinquency rates. The ASA asserts that two-year cohort default rates tell an incomplete story of student repayment struggles. Instead, the ASA recommends monitoring delinquency rates. While delinquency rates showcases intermediate problems students have with debt burdens, currently, there is not enough publicly accessible data to conduct a sophisticated study

using delinquency rates. However, only a fraction of students who become delinquent on their loan enter default, which has greater implications on the student and society (“Student Loan Guide,” 2014).

The third, and most important, limitation is the aggregate problem which stems from the nature of the study. Because ED prohibits access to individual data, I use aggregate data that assumes individuals within the aggregated population assume similar behaviors. While the study divides the student aid population into aid and grant recipients as well as by institution type, individual recipient characteristics still persist. However, the study can fulfill its purpose and claim market trends by using aggregated information.

## **CHAPTER FOUR: RESULTS**

There are multiple steps in determining the relationship between cohort default rates, program loan limits, and other independent variables for public and private schools.

First, to evaluate significance of the regression models, I consider the Significance F-statistic which codifies the significance level of the model. The Significance F-statistic measures whether variation in one of the independent variables can explain the variation in cohort default rates. In other words, the statistic tests the prediction of whether all of the slope coefficients are zero, called the null hypothesis,  $H_0$ . While testing the null hypothesis, I also test the alternative hypothesis,  $H_1$ , the prediction that at least one of the slope coefficients is not zero. The Significance F-statistic is measured against a significance level of 5%.

Then, I analyze the significance of each regression coefficient to determine if the predictor variable coefficient has a significant impact on cohort default rates. The regression coefficient describes the direction that the independent variable drives the dependent variable. For the coefficient to be statistically significant, I compare the coefficient's probability of not occurring to a significance level of 5%. This means that the coefficient is significant if the p-value is less than 5%. Hence, the p-value tests the prediction of whether the coefficient is unlikely related to the dependent variable, called the null hypothesis,  $H_0$ , or whether the coefficient is likely to impact the dependent variable, the alternative hypothesis,  $H_1$ .

This section reports results from the public and private regression models. In both the public and private school models, I assessed model significance, predictor variable coefficient significance, and scale of significant coefficients to answer the key questions.

## **Public School Model**

### *Significance of Model*

The public school regression model considers the following null and alternative hypothesis:

$$H_0 = \text{all public school variables' slopes are equal to 0}$$

$$H_1 = \text{at least one public school variable's slope is not equal to 0}$$

The F-statistic of the public regression model is  $1.921 \times 10^{-11}$  which is less than the significance level of 5%. I can reject the null hypothesis that all public school variables in the model have a slope equal to zero and accept the alternative hypothesis that at least



one public school variable's slope is not equal to zero. Thus, at least one variable in the model drives public school two-year cohort default rates.

### **Program Loan Limits**

The program loan limits variable coefficient considers the following null and alternative hypothesis.

$$\begin{aligned} H_0 &= \text{program loan limits do not drive two} \\ &\quad \text{– year cohort default rates for public school students} \\ H_1 &= \text{program loan limits do drive two} \\ &\quad \text{– year cohort default rates for public school students} \end{aligned}$$

The p-value of the program loan limit coefficient is 1.00 E-02 which is less than the significance level of 5%. I can reject the null hypothesis that program loan limits do not drive two-year cohort default for public school students and accept the alternative hypothesis that program loan limits drive two-year cohort default rates for public school students.

### **Percentage of Public School Loan Recipients**

The percentage of public school loan recipients' variable coefficient considers the following null and alternative hypothesis.

$$\begin{aligned} H_0 &= \text{the percentage of public school loan recipients do not drive two} \\ &\quad \text{– year cohort default rates for public school students} \end{aligned}$$

$H_1 = \text{the percentage of public school loan recipients do drive two}$   
 $\text{– year cohort default rates public school students}$

The p-value of the program loan limit coefficient is 2.861 E<sup>-06</sup> which is less than the significance level of 5%. I can reject the null hypothesis that percentage of public school loan recipients does not drive two-year cohort default rates for public school students and accept the alternative hypothesis that percentage of public school loan recipients drive two-year cohort default rates for public school students.

### **Percentage of Public School Grant and State Aid Recipients**

The percentage of public school grant and state aid recipients' variable coefficient considers the following null and alternative hypothesis.

$H_0 = \text{the percentage of public school grant and state aid recipients do not drive two}$   
 $\text{– year cohort default rates for public school students}$

$H_1 = \text{the percentage of public school grant and state aid recipients do drive two}$   
 $\text{– year cohort default rates for public school students}$

The p-value of the program loan limit coefficient is 2.241 E<sup>-04</sup> which is less than the significance level of 5%. I can reject the null hypothesis that percentage of public school grant and state aid recipients does not drive two-year cohort default rates for public school students and accept the alternative hypothesis that percentage of public school grant and state aid recipients drive two-year cohort default rates for public school students.

### **Financial Obligations Ratio (FOR)**

The financial obligations ratio variable coefficient considers the following null and alternative hypothesis.

$H_0 =$  *financial obligations ratio does not drive two*

*– year cohort default rates for public school students*

$H_1 =$  *financial obligations ratio does drive two*

*– year cohort default rates public school students*

The p-value of the financial obligations ratio coefficient is 2.702 E<sup>-02</sup> which is less than the significance level of 5%. I can reject the null hypothesis that financial obligations ratios do not drive two-year cohort default rates for public school students and accept the alternative hypothesis that financial obligations ratios drive two-year cohort default rates for public school students.

### **Unemployment Rates**

The unemployment rate variable coefficient considers the following null and alternative hypothesis.

$H_0 =$  *unemployment rates do not drive two*

*– year cohort default rates for public school students*

$H_1 =$  *unemployment rates do drive two*

*– year cohort default rates for public school students*

The p-value of the unemployment rate coefficient is  $2.798 \times 10^{-1}$  which is greater than the significance level of 5%. I cannot reject the null hypothesis that unemployment rates do not drive two-year cohort default rates for public school students. By definition, I cannot accept the null.

### *Sign of Independent Variable Coefficients*

The sign of the coefficient indicates whether the public school two-year cohort default rate is positively affected, through a positive coefficient, or negatively affected, through a negative coefficient. Thus, as shown in Table 4.1, an increase in program loan limits or unemployment rates result in an increase in public school two-year cohort default rates, although it is not a significant driver. Conversely, the increase in the percentage of public school loan recipients, percentage of grant and state aid recipients, and FOR ratio results in a decrease in public school two-year cohort default rates.

**Table 4.1**

### **Coefficients and Significance Levels and of Independent Variables in Public School Model**

<b>Independent Variables</b>	<b>Coefficients</b>	<b>P-value</b>
Program Loan Limits	2.17E-06	9.99E-03
Percentage of Public School Loan Recipients	-3.13E-01	3.74E-06
Percentage of Public Pell Grant and State Aid Recipients	-1.64E-01	2.27E-04
FOR Ratio	-1.88E-03	2.70E-02
Unemployment Rate	3.17E-01	2.80E-01

### **The Private School Model**

#### *Significance of Model*

The private school regression model considers the following null and alternative hypothesis:

$$H_0 = \text{all private school variables' slopes are equal to 0}$$

$$H_1 = \text{at least one private school variables' slope is not equal to 0}$$

The F-statistic of the private school regression model is  $2.415 \times 10^{-5}$  which is less than the significance level of 5%. I can reject the null hypothesis that all private school variables in the model have a slope equal to zero and accept the alternative hypothesis that at least one private school slope is not equal to zero. Thus, at least one variable in the model drives private school two-year cohort default rates.

#### *Significance of Variable Coefficients*

##### **Program Loan Limits**

The program loan limits variable coefficient considers the following null and alternative hypothesis.

$$H_0 = \text{program loan limits do not drive two}$$

$$\text{– year cohort default rates for private school students}$$

$$H_1 = \text{program loan limits do drive two}$$

$$\text{– year cohort default rates for private school students}$$

The p-value of the program loan limit coefficient is  $1.050 \times 10^{-1}$  which is greater than the significance level of 5%. I cannot reject the null hypothesis that program loan

limits do not drive two-year cohort default rates for private school students. By definition, I cannot accept the null.

### **Percentage of Private School Loan Recipients**

The percentage of private school loan recipients' variable coefficient considers the following null and alternative hypothesis.

$H_0 =$  the percentage of private school loan recipients do not drive two  
– year cohort default rates for private school students

$H_1 =$  the percentage of private school loan recipients do drive two  
– year cohort default rates private school students

The p-value of the program loan limit coefficient is 2.385 E-02 which is less than the significance level of 5%. I can reject the null hypothesis that the percentage of private school loan recipients does not drive two-year cohort default rates for private school students and accept the alternative hypothesis that the percentage of private school loan recipients drives two-year cohort default rates for private school students.

### **Percentage of Private School Grant and State Aid Recipients**

The percentage of private school grant and state aid recipients' variable coefficient considers the following null and alternative hypothesis.

$H_0 =$  the percentage of private school grant and state aid recipients do not drive two  
– year cohort default rates for private school students

$H_1 =$  the percentage of private school grant and state aid recipients do drive two  
– year cohort default rates for private school students

The p-value of the private school grant and state aid recipients is 9.837 E<sup>-03</sup> which is less than the significance level of 5%. I can reject the null hypothesis that the percentage of private school grant and state aid recipients does not drive two-year cohort default rates for private school students and accept the alternative hypothesis that the percentage of private school grant and state aid recipients drive two-year cohort default rates for private school students.

### **Financial Obligations Ratio (FOR)**

The financial obligations ratio variable coefficient considers the following null and alternative hypothesis.

$H_0 =$  financial obligations ratio does not drive two  
– year cohort default rates for private school students

$H_1 =$  financial obligations ratio does drive two  
– year cohort default rates private school students

The p-value of the financial obligations ratio coefficient is 6.707 E<sup>-04</sup> which is less than the significance level of 5%. I can reject the null hypothesis that financial obligations ratios do not drive two-year cohort default rates for private school students

and accept the alternative hypothesis that financial obligations ratios drive two-year cohort default rates for private school students.

### **Unemployment Rates**

The unemployment rate variable coefficient considers the following null and alternative hypothesis.

$H_0 = \text{unemployment rates do not drive two}$

$– \text{year cohort default rates for private school students}$

$H_1 = \text{unemployment rates do drive two}$

$– \text{year cohort default rates for private school students}$

The p-value of the unemployment rate coefficient is  $1.574 \times 10^{-1}$  which is greater than the significance level of 5%. I cannot reject the null hypothesis that unemployment rates do not drive two-year cohort default rates for public school students. By definition, I cannot accept the null.

### *Sign of Independent Variable Coefficients*

The sign of the coefficient indicates whether the private school two-year cohort default rate is positively affected, through a positive coefficient, or negatively affected, through a negative coefficient. Identically to the public school coefficient signs, shown in Table 4.2., as program loan limits or unemployment rates increase, private school two-year cohort default rates increase, although neither is a significant driver. Additionally, when the percentage of private school loan recipients, the percentage of grant and state



aid recipients, and the FOR ratio increases, private school two-year cohort default rates also increase.

**Table 4.2.**

**Coefficients and Significance Levels and of Independent Variables in Private School Model**

<b>Independent Variables</b>	<b>Coefficients</b>	<b>P-value</b>
Program Loan Limits	1.12E-06	1.06E-01
Percentage Private Loan Recipients	-1.26E-01	2.38E-02
Percentage Private Pell Grant and State Aid Recipients	-2.99E-01	9.84E-03
FOR Ratio	-3.32E-03	6.71E-04
Unemployment Rate	4.09E-01	1.57E-01

## **CHAPTER FIVE: ITERPRETATIONS OF RESULTS**

The study found institutional drivers that influence students' ability to repay loans in the absence of individual student data. The significance and signs of the coefficients help answer the key questions posed in the study. In this section, I answer the questions based on findings and provide justification for answers.

***Question 1: To what extent does federal loan allocation impact student default rates?***

The study measured loan allocation through student loan program rates established by Congress and provided by postsecondary institutions. In the study, public and private school default rates are positively correlated with program loan limits, meaning when Congress increases program loan limits, both public and private school students are more likely to struggle to payback their debt. The study, affirms the position

of loan limit skeptics Dynarski and Scott-Clayton (2012); Choy and Li (2006); and Hansen and Rhodes (1988) and perpetuates the notion that increasing access to student loans by means of loan limit increases is likely to lead to default.

While both public and private schools program limits have positive coefficients, program limits only significantly impact public school default rates. The uniqueness of the two institution types explains different outcomes. Namely, public schools receive three times the amount of federal aid funding than private schools. By having more capital to give, public schools have a larger percentage of students relying on federal student loans (Grinder & Kelly-Reid, 2013). Also, private school students are more likely to have financially supportive parents who help smooth the repayment process or take on PLUS loans for their children. Lastly, private school students, on average, have better money management skills (Sallie Mae, 2012). Thus, the characteristics of borrowers from different institutions can contribute to the disparity in program loan limit significance for public and private schools default rates. That being said, the relationship between program loan limits and private school default rates should be considered relevant but not material.

***Question 2: Is loan allocation or any other institutional factor significant contributors to student loan default?***

Different drivers carried the most significance for public school model and private school model, shown in Table 4.1 and Table 4.2. For the public school model, the most significant variable was the percentage of loan recipients, an inhibitor of default. The finding combats Hansen's and Rhodes' warnings that increasing the loan pool increases

the chances of subprime student investments. The finding does support Congress', the President's, and other advocates' push to increase the number of federal student loan borrowers. Increased borrower's negative impact on public school default rates could be a result of investment diversification. By expanding the number of borrowers, the federal government's loan investments transitions from the neediest student borrower, who are likely to be affected by similar socioeconomic events, to a range of borrowers, from varying backgrounds and characteristics.

In the private school model, the most significant variable is the Financial Obligations Ratio (FOR), an inhibitor of private school default rate. The finding reiterates the notion that private school students are more comfortable with handling debt, at least as comfortable as the US economy is. Private school students' debt management can also be seen by the lower balance on their credit cards than public school students and are more likely to have a zero percent balance.

### **Other Notable Findings**

Many political influencers and academics pontificate the benefits of Pell grants and detriments of high unemployment rates regarding student loan repayments. Interestingly, in this study, Pell grants are less significant, and unemployment rates are not significant. Since 1965, policy makers and advocacy groups have debated the economic and social cost effectiveness of Pell grants (Hillman, 2014). Because of the extreme upfront cost of Pell grants, it is harder for budget constrained administrations to justify massive Pell grant investment. This study confirms that increasing Pell grant

recipients decreases both public and private schools' default rate but also shows that Pell grants are not the only means in reducing students chances of defaulting.

Tim Woo (2002) aligned much of students repayment struggles to their chances for attaining a job. The study confirms the positive relationship between unemployment and public/private school default rates but relays that other factors are better to discern student payback ability. This could be because attaining higher education at a four-year public or non-profit private institution increases students' chances to get a higher paying job (Avery and Turner, 2012). Hence, with a bachelor's degree, students are more resilient to economic job instability.

Overall, the study upholds the value of student investment in higher education through student loans, irrespective of institution type. Interestingly, it highlights the potential of loan program expansion, which can act as a budgetary buffer. However, it denounces, the current loan allocation system that relies on periodic increases of program maximums, especially for public schools. Thus, as Dynarski and Scott-Clayton suggested in 2012, federal student loan allocation needs to be reformed to better tailor loans to individuals or groups of individuals.

## **CHAPTER SIX: DISCUSSION OF POLICY IMPLICATIONS**

The study found that broadening the reach of federal student loans can decrease public and private school default rates. As Congress, the President, and ED look to increase the student loan scale, they should strive to simplify the loan allocation process and align loan amount to the student's educational needs.

In this section, I highlight key alternatives to the current loan allocation process. These alternatives are the three largely discussed in popular press, by higher education generals, and amongst policy makers and influencers. This section describes and values the three alternatives: (1) President Obama's student loan revisions, (2) Income Share Agreements, and (3) Income-Contingent Loans<sup>12</sup>.

### **President Obama's student loan revisions**

In an effort to revise the Federal Student Loan Program, Office of the Press Secretary shares the President's legislation proposal which links student aid allocation and college quality. With this ideal, he established two initiatives relevant to loan allocation: (1) paying for performance and (2) promoting innovation and completion. Through the initiatives, he hopes to eliminate the current loan allocation structure and provide higher education at a better "bargain" (Office of the Press Secretary, 2013).

#### *Paying for Performance*

By 2015, President Obama wants to identify colleges which generate the highest return on a student's investment in education through a College ScoreCard created by the ED. The score card determines how much student loan funding a college receives by comparing colleges with similar missions, identifying colleges that do the most to help students with disadvantaged backgrounds, and recognizing colleges working towards performance improvement. The ratings are quantitatively measured based on:

- College access: percentage of students receiving Pell grants

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<sup>12</sup> The proposed Income Share Agreement and Income-Contingent loans have similar titles to current loan repayment plans but are different plans.

- College affordability: college cost of attendance, scholarships, and average loan debt
- College outcomes: graduation rates, graduate earnings, advanced degrees of graduates

Through college ratings, college allocation of debt would be in line with the success of the college rather than benchmarking allocations individual and program loan limits. The ED would establish loftier loan limits for money management purposes.

Additionally, to promote student college success and money management, the Paying for Performance initiative would require students to complete a certain percentage of classes before receiving continued funding. The President hopes to ensure students complete college on time and focus loan amounts on educational expenses (Office of the Press Secretary, 2013).

### *Promote Innovation and Competition*

Along with linking student aid to school performance, President Obama also targets the cost of attendance, which has historically driven higher loan limits. Under the *Promote innovation and competition initiative*, the president challenges colleges and states to craft innovative ways to learning in college which have lower costs and higher success rates. As an example, President Obama cites the University of Maryland's redesigned entry level psychology course which increased student passing rates and cut costs by 70%. He voices the cost and educational upside to integrating technology into students' lives. Furthermore, President Obama hopes to financially encourage colleges that work towards innovative education ideas by awarding more Pell grants to colleges

that become “experimental sites”. Overall, he aims to make higher education a more efficient business where students will have to borrow less and have a higher return on investment (Office of the Press Secretary, 2013).

### **Evaluation of President Obama’s Indicatives**

The president’s movement to better the student loan program is a needed adjustment but the logistic viability of his plan is questionable. President Obama’s *Paying for performance* and *Promote innovation and competition* initiatives are necessary to restructure the student loan allocation process and necessary allocation amount. As the President envisions, the College ScoreCard promotes transparency between potential college students and higher education. To substantiate the initiative, it encompasses the recommendations from The Project on Student Debt: (1) reduce students’ need to borrow via reducing college costs and (2) provide students with key information via the College ScoreCards. More importantly, it shifts aid allocation generated from program loan limits to individualized aid allocation based on the college’s return on investment. After reading the horror stories of students unknowingly overborrowing and defaulting on student loans, President Obama’s solution is a step in the right direction. However, I am concerned that the rating is too subjective and act more as guides, like BusinessWeek’s top ranked business schools<sup>13</sup>, especially since the ED is considering a range of factors – from comparing college quality to college outreach to disadvantaged students. Regardless, President Obama’s focus on strengthening the US higher education and student loan allocation would change the paradigm.

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<sup>13</sup> Business Week ranks US business schools based on student assessment, employer opinion, median salary, undergraduates to MBAs, and academic quality. While many of the variables are quantifiable and objective, student assessment can be a bias representation of school quality.

## **Income Share Agreements**

The American Enterprise Institution (AEI), right leaning think tank, argues that loan limits promote student overborrowing and inflated tuition rates. Instead, AEI proposes eliminating loan limits and adapting Income Share Agreements (ISAs). ISAs are financial instruments to privately finance higher education where investors provide students with financing for higher education in exchange for the students' future earnings. With an ISA, students pay a share of their income for a certain amount of time; there is no principle or interest rates. In the agreement, investors evaluate the students' characteristics and set a rate for each college the students consider based on perceived return on investment. Investors can then preserve their investment by actively supporting students' higher education achievements

The AEA prefers ISAs because they minimize the downside risk of student investment in higher education. Conjunctively, ISAs remove the government from the student loan process and personalize loans to the individual, an issue with current loan allocation. Similarly to President Obama's initiative, ISAs help channel students to higher quality programs at a lower cost because they offer better terms to students for programs that investors expect to be high value. Their system also signals the value of different institutions and programs to students through the differences in income percentage they have to repay.

The AEI recognizes that a full ISA program is unrealistic. However, AEI concludes that there should be a hybrid of federal student loans with lowered loan limits that encourage alternative financing. Other organizations active in higher education



policy, such as the National Center for Policy Analysis<sup>14</sup> and the NAF, pontificate the potential of ISAs for college financing (Palacios, M., DeSorrento, T., & Kelly, A. P., 2014).

### **Evaluation of Income Share Agreements**

The benefit of ISAs is that they make higher education financing student centric and remove the politics that impact student loan legislation. Instead of providing aid to students by generically fractioning out loan amounts, ISAs view student individuals' unique investments, similar to a start-up. Moreover, ISAs equally distribute risk between students and investors. Conversely, while ISAs eliminate student debt from students' portfolio, there are three drawbacks. First, an ISA approach to financing will funnel many students into monetarily high-quality programs, like computer science, engineering, or business administration<sup>15</sup>. This would result in an oversupply of students in the high-paying jobs and an undersupply of students in lower-paying but highly-rewarding occupations, like education or social work. Second, there is a chance that access to an ISA is unattainable for low income students who appear to be riskier investments or are priced out of the market because they cannot afford the rate. Third, ISAs are hard to scale up nationally on the individual level. While the tiered and population ISA models exist, they are burdened with pooling issues that the current student loan program faces.

Since the establishment of the Higher Education Act, the first objective of federal student aid is to assist those with substantial financial need to pursue higher education.

This segment of the student aid market is more likely to be priced out than middle- and

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<sup>14</sup> The National Center for Policy Analysis is a nonprofit, nonpartisan research organization highly respected by academia.

<sup>15</sup> The Sallie Mae foundation ranked the three as the most lucrative positions currently.

upper-income students because they are more risk adverse to borrowing large amounts of money (Hansen & Rhodes, 1988; Avery & Tuner, 2012) and, financially, more risky to invest in. Thus, federal government buy in on an ISA-only financial assistance system is unlikely. However, ISAs are an ideal avenue for middle- and upper-income students who only need to supplement a fraction of their education costs. By targeting middle- and upper-income students, ISAs can remain a manageable, size and students who can afford to make choices on higher education financing have an additional option.

### **Income-Contingent Loans**

Congressman Tom Petri first suggested Income Contingent Loans (ICLs) in an attempt to simplify student loan allocation and lessen default rates. ICLs set loan limits based on program of study and expected earnings. Built from Milton Friedman's graduation tax<sup>16</sup>, income Contingent Loans (ICLs) are advantages because it creates default protection and smooth consumption.

EducationSector, a part of the American Institute for Research, expanded Petri's legislation and recommends an ICL model where the federal government is still issuing the loan, which aligns with current policy. EducationSector's ICL model is mirrored from the successful Australian model implemented in 1989. In Australia, the government sets loan limits based on the college program. Students then have a choice to pay tuition upfront at a discounted percent value price or defer the loan until after graduation. After graduation, the student pays off the loan as a percentage of income. This process tailors cost of attendance and loan payments to students' programs and students' future earnings,

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<sup>16</sup> With Milton Friedman's graduation tax, graduates agreed to pay a percent of their income for a certain length of time.

and sets a minimum income level where students do not have to pay. Payments would be automatically collected through the tax system, such as Social Security, which would remove repayment paperwork.

EducationSector argues that redesigning loan allocation through ICLs simplify the process and match loan aid to projected performance. With this allocation program, subsidized and unsubsidized loans would be replaced by one type of loan, an ICL. Hence, ICLs do not base individual's loan limits on a student's family income due to irrelevance once a student has graduated and entered repayment. Nevertheless, ICLs are sensitive to college program earning potential and student income variation. Thus, it removes the heavy debt burden that young borrowers in repayment feel and promotes them to be participating members in the economy, healthily taking on other types of consumer debt as investments.

### **Evaluation of Income Contingent Loans**

Along with Petri and EducationSector, I agree that ICLs are a pragmatic and logical means to allocate financial aid. However, I perceive three drawbacks to ICLs. First, under ICLs, there is a chance of moral hazard where students avoid higher paying jobs and have a lower loan amount. Second, there is a chance for colleges to see ICLs as a reason to increase the cost of attendance and decrease grant aid which would cause more students to be reliant on larger loans. Third, ICLs do not consider loan distribution on an individual level, allowing two students with varying levels of socioeconomic standing to receive the same loan amount because there is no program and individual loan limit system.

However, ICLs are a rational way to adapt an international model to the US federal student loan program. Academia reports that student confusion increases chances of default because they are unaware of how to equate individual and program maximum limits to the amount of debt they can manage (Dynarski & Scott-Clayton, 2012). ICLs simplify the student loan program and directly connect students' investment in higher education to their future occupations.

### **Resolution of Alternatives**

Overall, loan allocation is not an easy problem to solve. There are many stakeholders involved with varying degrees of risk appetites, from risk-junky investors to risk-adverse students. Ideally, a hybrid of the three loan allocation alternatives would be optimal. Ideologically, President Obama's desire to match financial aid to education quality is needed to generate higher returns on financial aid programs. Creatively, ISAs are an innovative method of financing college education that would better serve middle- and upper-class students than the current student loan structure. Structurally, ICLs encourage students to invest in education linked to the pursuit of high-quality occupations.

Realistically, ICLs have the greatest upside potential for a national-scale student loan reform. The program transfers student loan allocation from considering a student's financial history to a student's financial future. ICLs accomplish the goals the study suggest: (1) encourages students to take on loans because they better understand loan pricing and payback up front and (2) protects students from over borrowing by assessing monetary return on education.

## CHAPTER SEVEN: CONCLUSION

Student loan allocation research has gained momentum in the last 10 years, largely pioneered by Susan Dynarki and Judith Scott-Clayton's comments on the inefficiency of current student loan allocation in 2006. Their publication forced Congress and the executive branch to start reconsidering the student loan process initiated 40 years prior. With that has come an influx of loan reforms that attempt to adapt the Higher Education Act to the higher education landscape of the 21<sup>st</sup> century.

This study aims to determine productivity of the current loan allocation process by considering educational and economic institutional variables that research suggests drive student loan default rates. The study suggested that current student loan allocation is ineffective for program limits did not subdue student default rates. However, the study also revealed that federal loan expansion lowers default rates. Hence, there is a chance for the federal government to change student loan policy by expanding the number of student loan recipients. These findings should motivate policy makers to reform the federal student loan program by expanding its reach but placing better limitations on the amount an individual can borrow.

As President Obama pushes higher education reform, a potential student loan reform program is based on Australia's Income-Contingent Loan program. The program allocates loans based on students' intended field of study which they pay back as a percentage of income after graduation. ICLs have a similar structure to the U.S.'s current federal student loan program, but consider students potential earning rather than arbitrarily deciding a student's neediness.

Regardless, with any new loan allocation method, the government should consider its role. Currently, the government guarantees loans and the subsidy distorts the market. Colleges feel free to over-inflate COA and lenders have little incentive to lend wisely. Then borrowing amounts largely depend on 18-year-old students who have very little past experience with any debt instrument. Hence, in some capacity, the student loan allocation system needs to be

reworked. If the government does not limit potential borrowers' level of decision making through ICLs (or a similar type program), then they should determine ways to effectively educate potential borrowers on future implications of loan size in relation to future income. There is a third option: remove most government subsidies for higher education, except for the neediest borrowers, and place higher education financing responsibility to the private sector which is familiar with uncollateralized loans.

### **Personal Reflection**

Lastly, as I worked through the study, it was interesting to see the roadblocks of collecting meaningful data. Ultimately, the study wanted to find a linkage through political policy, namely student loan limit polity, and student loan default. Because of data blockage, it was difficult for me to attain information which could lead to substantially impactful solutions. Specifically, colleges and the ED lock individual-specific data forcing me to have to aggregate up to institution type. After calling financial aid offices at various institutions in addition to government departments, I realized that it currently was impossible to attain records of students on an individual or college level. The NCES and Project on Student Debt report certain information on the state level not all variables were broken down enough to run a regression. In a perfect experiment, I would have at least been able to break down information by independent and dependent students as well. The lack of good data caused me to echo others that policy around availability of education data should be released. This way academics conducting similar studies as mine can eliminate some of the aggregate data problem that I encountered.

## **APPENDIX A: REGRESSION TABLES**

## EXHIBIT A1: Public School Model Data

Year	2-year Cohort Default Rate	Program Loan Limit	Educational Drivers		Economic Drivers	
			% Public Loan Recipients	% Public Pell Grant and State Aid Recipients	FOR Ratio	Unemployment Rate
1987	14%	\$ 17,250	30%	37%	69.77	6%
1988	15%	17,250	29%	42%	68.20	5%
1989	14%	17,250	29%	43%	67.92	5%
1990	13%	17,250	29%	44%	67.73	6%
1991	12%	17,250	30%	50%	67.13	7%
1992	13%	17,250	33%	55%	63.82	7%
1993	12%	23,000	36%	54%	62.68	7%
1994	12%	30,684	41%	54%	63.48	6%
1995	11%	30,684	47%	54%	65.83	6%
1996	10%	30,478	48%	55%	66.52	5%
1997	9%	30,314	49%	56%	66.60	5%
1998	8%	30,234	49%	57%	65.38	5%
1999	7%	30,003	50%	54%	66.53	4%
2000	7%	29,863	51%	55%	67.18	4%
2001	6%	29,742	51%	60%	69.68	5%
2002	6%	29,709	51%	63%	69.26	6%
2003	5%	29,682	53%	65%	67.91	6%
2004	5%	29,639	53%	65%	67.23	6%
2005	5%	29,526	53%	62%	68.94	5%
2006	6%	29,528	53%	60%	69.70	5%
2007	7%	29,581	53%	61%	71.60	5%
2008	7%	33,929	48%	64%	70.83	6%
2009	7%	33,849	43%	80%	69.58	9%
2010	8%	33,956	40%	92%	65.56	10%
2011	10%	33,988	35%	93%	63.01	9%



## EXHIBIT A2: Public School Correlation Matrices

	<i>Program Loan Limits</i>	<i>% Public Loan Recipients</i>	<i>% Public Pell Grant and State Aid Recipients</i>	<i>FOR Ratio</i>	<i>Unemployment Rate</i>
<b>Program Limits</b>	1				
<b>% Public Loan Recipients</b>	0.760	1			
<b>% Public Pell Grant and State Aid Recipients</b>	0.734	0.296	1		
<b>FOR Ratio</b>	0.029	0.311	-0.152	1	
<b>Unemployment Rate</b>	0.079	-0.450	0.633	-0.350	1

### EXHIBIT A3: Public School Regression Results

<i>Regression Statistics</i>						
Multiple R						0.97306026
R Square						0.946846269
Adjusted R Square						0.932858445
Standard Error						0.008281158
Observations						25

<i>ANOVA</i>						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	5	2.32E-02	4.64E-03	6.77E+01	1.92E-11	
Residual	19	1.30E-03	6.86E-05			
Total	24	2.45E-02				

<i>Independent Variables</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Program Loan Limits	2.17E-06	7.59E-07	2.86E+00	9.99E-03	5.83E-07	3.76E-06
Percentage of Public School Loan Recipients	-3.13E-01	4.88E-02	-6.42E+00	3.74E-06	-4.15E-01	-2.11E-01
Percentage of Public Pell Grant and State Aid Recipients	-1.64E-01	3.62E-02	-4.53E+00	2.27E-04	-2.40E-01	-8.84E-02
FOR Ratio	-1.88E-03	7.85E-04	-2.40E+00	2.70E-02	-3.52E-03	-2.38E-04
Unemployment Rate	3.17E-01	2.85E-01	1.11E+00	2.80E-01	-2.79E-01	9.13E-01

### EXHIBIT A4: Private School Model Data

Year	2-year Cohort Default Rate	Program Loan Limits	Educational Factors		Economic Variables	
			% Private Loan Recipients	% Private Pell Grant and State Aid Recipients	FOR Ratio	Unemployment Rate
1987	5%	\$ 17,250	41%	28%	69.77	6%
1988	6%	17,250	40%	31%	68.2	5%
1989	5%	17,250	39%	31%	67.92	5%
1990	6%	17,250	41%	31%	67.73	6%
1991	6%	17,250	41%	34%	67.13	7%
1992	7%	17,250	42%	35%	63.82	7%
1993	7%	23,000	47%	34%	62.68	7%
1994	7%	30,684	52%	33%	63.48	6%
1995	7%	30,684	56%	32%	65.83	6%
1996	6%	30,478	57%	32%	66.52	5%
1997	6%	30,314	58%	32%	66.6	5%
1998	5%	30,234	59%	33%	65.38	5%
1999	4%	30,003	60%	31%	66.53	4%
2000	4%	29,863	61%	31%	67.18	4%
2001	4%	29,742	61%	33%	69.68	5%
2002	4%	29,709	62%	34%	69.26	6%
2003	3%	29,682	62%	35%	67.91	6%
2004	3%	29,639	62%	35%	67.23	6%
2005	2%	29,526	62%	33%	68.94	5%
2006	3%	29,528	62%	32%	69.7	5%
2007	4%	29,581	62%	33%	71.6	5%
2008	4%	33,929	57%	33%	70.83	6%
2009	5%	33,849	53%	39%	69.58	9%
2010	5%	33,956	50%	45%	65.56	10%
2011	5%	33,988	45%	45%	63.01	9%

### EXHIBIT A5: Private Correlation Matrices

	<i>Program Loan Limits</i>	<i>% Private Loan Recipients</i>	<i>% Private Pell Grant and State Aid Recipients</i>	<i>FOR Ratio</i>	<i>Unemployment Rate</i>
<b>Program Limits</b>	1				
<b>% Private Loan Recipients</b>	0.756	1			
<b>% Private Pell Grant and State Aid Recipients</b>	0.439	-0.073	1		
<b>FOR Ratio</b>	0.029	0.321	-0.374	1	
<b>Unemployment Rate</b>	0.079	-0.455	0.458	-0.350	1

## EXHIBIT A6: Private Regression Analysis

<i>Regression Statistics</i>	
Multiple R	0.871529556
R Square	0.759563768
Adjusted R Square	0.696291075
Standard Error	0.0082054
Observations	25

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	5	0.004041266	0.000808253	12.00460634	2.41542E-05
Residual	19	0.001279243	6.73286E-05		
Total	24	0.005320509			

<i>Independent Variables</i>	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Program Loan Limits	1.11576E-06	6.56803E-07	1.698770733	0.105678429	-2.58947E-07	2.49046E-06
Percentage of Private School Loan Recipients	-1.264E-01	0.051473931	-2.456013261	0.023846447	-0.234156834	-0.018684481
Percentage of Private Pell Grant and State Aid Recipients	-2.987E-01	0.104142148	-2.868439849	0.009836914	-0.51669751	-0.080753467
FOR Ratio	-3.316E-03	0.000817025	-4.058284111	0.00067069	-0.005025775	-0.001605667
Unemployment Rate	0.408909345	0.277824994	1.471823462	0.157439235	-0.172585051	0.990403742

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